1) What is the timeline for doing the Kiln 1 testing for mercury, HCl/chlorine, and PM? The outline states that it will be done "after the Confirmatory Test discussed above." Can Norlite be more specific about the timing of this testing?

To provide good data in the shortest time possible, Norlite will conduct the mercury, HCl/Cl_2, and PM testing during the same campaign as the confirmatory testing assuming that agreement on the testing goals and protocol can be reached. This proposal would be the most streamlined and reasonable method for all parties involved.

2) The outline states, "[t]he OPLs will closely match those established in the 2015 CPT Report and NOC except for stack gas flowrate and venturi pressure drop." Under this scenario, the stack gas flowrates will be different than the 2015 CPT. The 2015 CPT determined minimum scrubber water flowrate combined with maximum stack gas flow rate for determining OPLs, instead of the minimum liquid to gas ratio option specified in 40 CFR Part 63, subpart EEE. Since the stack gas flowrate in the proposed testing will not be the same as the 2015 CPT, the scrubber water flowrate should be normalized to the 2015 CPT by converting both tests to a minimum scrubber liquid to gas ratio basis. Since these ratios are not the same from the two conditions of the 2015 CPT, more discussion may be needed on the appropriate value to use. Using the lower ratio (Condition 2) would be considered worst case.

It was not the intention of the facility to establish a liquid to gas ratio through the 2015 testing. We will be able to reduce the scrubber recirculation rate to match the Condition 2 ratio if necessary. However, it raises a question as to eliminating the maximum stack gas flowrate OPL in favor of the liquid to gas ratio. Please see a discussion below on the merits of this approach.

3) Also, the constituent feed rates for mercury and chlorine during two conditions of the 2015 CPT were not the same. Further explanation/discussion is needed on this point. Using the higher feed rate from the two conditions (Condition 2) would be acceptable.

Norlite acknowledges the constituent feed rates were not identical due to the characteristic of the feedstocks. However, Norlite controls this variability through analytical testing. For each test Norlite will make every effort to have the constituent feedrates consistent for all runs in all conditions.

4) The outline states, "the stack gas flowrate will be set as close to 29,300 scfm as possible. Since the venturi pressure drop is a function of

the stack gas flowrate, it should fall around 4.5 in w.c.. This approach assumes that EPA and Norlite can come to an agreement regarding the difference between a normal operating window versus different modes of operation and how to define them." Please elaborate on the intent of setting the flowrate at the midpoint of the two conditions from the 2015 CPT in terms of setting OPLs going forward. Also, please explain if venturi pressure drop is solely a function of stack gas flow rate, or if other parameters (e.g. scrubber liquid flow rate) affect pressure drop.

The proposal is to set the stack gas flowrate in the middle of the range established in the 2015 CPT in order to support the claim that Conditions 2 and 3 from the CPT define an operating envelope and are not two different modes of operation. Collecting samples while operating in the middle of the operating window and demonstrating compliance with the emission standards provides more confidence that the units operate in compliance with the OPLs established in the 2015 CPT during normal operations. Norlite demonstrated good compliance with the emission parameters at the lower and higher stack gas flowrates with all other parameters remaining the same.

The scrubber recirculation rate can have a minor effect on the venturi pressure drop but not to the extent that the stack gas flowrate does. We do not have any data to show the effect because we have never studied it. As indicated above, Norlite does not try to vary the scrubber recirculation rate. However, this approach can change if we define and use a limit on liquid to gas ratio rather than maximum stack gas flowrate. Please see discussion below.

5) The outline states, "[b]y conducting the emission testing as outlined above and demonstrating compliance with the Subpart EEE emission standards, Norlite will not be required to perform a CPT on Kiln 1 until the next scheduled test under 40 CFR Part 63, subpart EEE." Due to the historical staggering of testing, we should specify the date for the "next scheduled test required under 40 CFR Part 63, subpart EEE." EPA's position is that the next CPT would be due relative to the 2015 CPT for both kilns. Prior to that date, Norlite can request a waiver under 40 CFR 63.7(h) from testing one of the kilns (presumably Kiln 2).

Norlite agrees that the next CPT for both kilns must commence on or before October 29, 2020, which is based on the 2015 CPT.

Norlite proposal to switch from stack gas flowrate to liquid-to-gas ratio OPL

EPA's second comment on the proposed testing outline raises an interesting question that can be used to resolve the disagreement surrounding the setting of OPLs for the venturi scrubber pressure drop and the maximum stack gas flow rate. These two parameters conflict with each other in that a high stack gas flowrate induces a high minimum venturi scrubber pressure drop and low minimum venturi scrubber pressure drop can only be achieved with a lower stack gas flowrate. It is impossible to define a comfortable operating window using only one test condition. Norlite used two test conditions at each end of the normal operating envelop to set these OPLs. However, EPA has expressed disagreement with the conditions of the test and the use of the data.

The regulations allow for an alternative monitoring procedure that is now being considered by EPA, DEC and Norlite in order to resolve the issue. 40 CFR 63.1209(m)(1)(i)(C) describes the requirement for setting OPLs for the control of particulate matter for high energy wet scrubbers. It states that the source must set either a) a minimum liquid to gas ratio or b) a minimum scrubber water flowrate and a maximum stack gas flowrate. 40 CFR 63.1209(m)(2) also describes the setting of OPLs for the control of particulate matter where the source must set a maximum stack gas flowrate or maximum production rate. The concept is that the maximum production rate is a surrogate for the maximum stack gas flowrate. The regulatory sections regarding the setting of OPLs for the control of metals, mercury and HCl/Cl_2 contain the same requirements. By using the flexibility afforded by the regulations, Norlite can eliminate the maximum stack gas flowrate OPL.

At Norlite, the maximum production rate is used as a surrogate for stack gas flowrate for setting OPLs for PCDD/PCDF control and Destruction Removal Efficiency (DRE). This approach works because PCDD/PCDF and DRE control are based on heat and residence time of the heat and the maximum production rate (in Norlite's case, the shale feedrate). These factors together establish a reasonable worst case condition because the shale serves as a significant heat sink. Although the heat sink properties of the shale feed have nothing to do with the operation of the venturi scrubber, by manipulating the venturi pressure drop (which bears a close relationship to the gas velocity) and the scrubber liquid recirculation rate, Norlite can control emissions of particulate matter, metals and HCl/Cl_2 without defining the maximum stack gas flowrate as an OPL.

Norlite proposes to have the maximum production rate serve as the OPL required under 40 CFR 63.1209(l)(2), 40 CFR 63.1209(m)(2), 40 CFR 63.1209(n)(5) and 40 CFR 63.1209(o)(2). If this is allowed, Norlite can set an OPL for liquid to gas

ratio rather than maximum stack gas flowrate under 40 CFR 63.1209(l)(2), 40 CFR 63.1209(m)(1)(i)(C), 40 CFR 63.1209(n)(3) and 40 CFR 63.1209(o)(3)(v).

Approval of this proposal is justified for the following reasons:

1. The stack gas flowrate will still be measured in order to calculate the liquid to gas ratio.
2. The stack gas flowrate will still be controlled at the upper level since the right conditions must still exist to make the lightweight aggregate. Velocity higher than the established 33,103 SCFM disrupts the heat profile in the kiln for making quality product.
3. Norlite has a wide enough range of control on the recirculation rate of the scrubber liquid to comply with an established limit on the liquid to gas ratio.
4. The kiln production rate (shale feedrate) is already an established OPL for the PCDD/PCDF and DRE parameters.

With approval of this request, Norlite suggests a modification to the Title V permit that changes the OPLs to match those of Condition 1 and Condition 3 of the 2015 NOC and CPT Report. Instead of a maximum stack gas flowrate of 33,103 SCFM, a new OPL of 6.8 will be established for liquid to gas ratio. As such, there will be no need to define different modes of operation as suggested by EPA.

Therefore, Norlite will prepare and submit a Confirmatory Performance Test (CfPT) plan to test the PCDD/PCDF emissions from both Kiln 1 and Kiln 2 and a supplemental Comprehensive Performance Test (CPT) plan for Kiln 1 to duplicate Condition 3 of the 2015 CPT that was performed on Kiln 2.